Sonoma Creek: Sediment and Creek Health

Dyan Whyte, TMDL Program Manager
Tina Low, TMDL Project Manager
S.F. Bay Regional Water Quality Control Board

Rebecca Lawton, Sonoma Ecology Center

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Protecting and Restoring a Watershed: Sonoma Creek

- Unique, valuable habitat for threatened and endangered species (steelhead, chinook salmon, freshwater shrimp)
- Population of steelhead in decline
- Excessive erosion in watershed
- Listed as Impaired by Sediment

Sonoma Ecology Center. Chinook salmon on redd

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Today's presentation

- Recent developments at the Water Board: Napa River sediment TMDL approved
- Overview: The TMDL process
- Implementing a sediment TMDL: example from Napa
- Fish and sediment in the Sonoma Creek watershed
- Next steps in developing the TMDL

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Water Board acts on Napa River Sediment TMDL

- Napa River Sediment TMDL and Habitat Enhancement Plan adopted by the Water Board, Jan. 23, 2007

Goal: Restore a sustainable fishery

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TMDL program overview

- A Total Maximum Daily Load (TMDL) is an action plan to clean up polluted water—amends the region's Basin Plan
- TMDL and implementation plan require CEQA review
- Water Board holds public hearings
- U.S. EPA must approve

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Water Board's regulatory programs

- Waste discharge requirements (WDRs) and/or waivers (for vineyards, rural areas, and grazing lands)
- Stormwater management plans/permits

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Napa TMDL: A holistic approach

- TMDL Implementation
  - 50% reduction in human-caused sediment sources
    - Grazing
    - Vineyards
    - Roads
    - Channel incision and bank erosion
    - Gullies and landslides
- Habitat Enhancement Plan
  - Enhance fish passage
  - Maintain or lower stream temperatures
  - Reduce human-caused bed/bank erosion

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The Napa Example

- Water Quality Targets
  - Stream bed scour
  - Gravel permeability
- 50% reduction in human-caused input of sand and finer sediment to Napa River
- Implementation Plan focuses on existing regulatory authorities, cooperative restoration efforts, and new regulatory programs

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Implementation of Napa TMDL and Habitat Enhancement Plan

- Land managers implement erosion control measures
- Stewardships initiate channel restoration projects
- Public agencies manage roads and property to protect woody debris and reduce erosion
- State agencies and municipalities work to enhance baseflow
- Local stakeholders develop fish passage projects

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Technical Approach

✓ Limiting Factors Analyses
Identifies **causes** of impairment & confirm listing

✓ Sediment Budget Studies
Identifies **sources** of sediment & habitat impairment

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Sonoma Creek at HWY 121

From Data to Action I

- Determine conditions necessary to keep the fishery healthy ("targets")
- Determine total allowable sediment input (TMDL)
  - Based on reference watershed, knowledge of historical stream conditions, and current sediment inputs
  - May be expressed as:
    - Percentage of natural "background" sediment
    - Sediment load per area per year, accounting for natural processes and human-caused inputs

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From Data to Action II

- Numeric TMDLs translate into “allocations” (allowable sediment input) for sources
  - Vineyards
  - Grazing lands
  - Roads
  - Human-caused bed and bank erosion
- When targets are met, the TMDL is achieved

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From Data to Action III

- TMDL Implementation Plan to Reduce Sediment
  - Regulatory tools: permits, waste discharge requirements/waivers
  - Adaptive, flexible plan relies on effective BMPs
- Habitat Enhancement Plan
  - Depends on collaboration and partnerships in the watershed
  - Actions are voluntary, but necessary to restore the fishery

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Possible actions to reduce sediment

- I.D. landslides/gullies and accelerate natural recovery
- Manage farms to keep soil onsite
- Design new developments/projects to retain, infiltrate, or treat runoff
- Maintain/repair roads and trails to minimize erosion

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Potential Habitat Enhancement Measures

- Stabilize and revegetate stream banks
- Preserve and restore riparian vegetation
- Establish stream buffer zones
- Remove fish migration barriers
- Manage large woody debris to provide refuge habitat

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Our next steps

- Assess sources, develop numeric targets and allocations and identify needed actions
- Prepare draft Basin Plan amendment and Project Report, release for scientific peer review and public comment

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Public involvement in the TMDL process

- Meetings as requested by stakeholder groups
- CEQA review process
  - Public scoping meeting
  - Comment period
- Formal public comment period (45 days)
- Regional Water Board adoption hearing
- State Water Board Hearing

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Contact Information

S.F. Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400 Oakland, CA 94612
Dyan Whyte, TMDL Program Manager
(510) 622-2441 dwhyte@waterboards.ca.gov

Tina Low, TMDL Project Manager
(510) 622-5682 tlow@waterboards.ca.gov

Sonoma Ecology Center
20 East Spain Street Sonoma, CA 95476
Rebecca Lawton
(707) 996-0712, x116 becca@sonomaecologycenter.org

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Sonoma Creek at Sugar Loaf State Park